

REMARKS/ARGUMENTS

This is in response to the non-final official action dated January 26, 2007.
Reconsideration is respectfully requested.

Claim rejections under 35 USC § 101

The Examiner rejected Claims 1-21 because the claimed invention is allegedly directed to non-statutory subject matter. He states specifically that applicants would merely manipulate abstract ideas, the ideas being training data. In response, applicants submit that in contrast to the Examiner's opinion the present invention is directed to training neural networks. This is clearly distinct from manipulating training data. The manipulation of training data is one step of the method when the training data is perturbed with a random variable. Applicants have amended each independent claim to include a practical application that indicates a specific practical utility. These practical applications and utilities are also set forth in the specification, such as, *inter alia*, in paragraph [0002] and [0003]. The amendment also relies on disclosures made in paragraph [0010]. Accordingly, applicants state that applicants' invention is not merely the manipulation of abstract ideas and there is no "abstract construct". The claims do provide a limitation to the transformation of real world data, that is, they claim a method for training a plurality of neural networks for process optimization. Or, in the alternative, the claims provide a computer system for determining at least one of prognosis value. Further, the claims provide applying the trained neural networks to process optimization. Optimizing a process and determining a prognosis are real world data.

Claim rejection under 35 USC § 112

The Examiner rejected claims 1-21 because as he stated, current case law (and accordingly, the MPEP) require such a rejection if a 101 rejection is given. In response, Applicants submit that Applicants have disclosed a practical application for the invention, and therefore, Applicants have amended the claims to further provide the limitation to the transformation of real world data, that is, the claims provide a method for training a plurality of neural networks for process optimization. Or, in the alternative, the claims provide a computer

system for determining at least one of prognosis value. Further, the claims provide applying the trained neural networks to a process optimization. Optimizing a process (physical, biological, chemical and technical processes and systems) and determining a prognosis are real world data.

Claim rejections under 35 USC § 102

The Examiner rejected Claims 1, 12, and 17 as being anticipated by Neuneier et al. (US 6,282,529 B1) The Examiner states that the Neuneier reference would disclose that for training neural networks it is known to generate training data by introducing additional noise (column 1, lines 41, 42) and to use Gaussian noise with an average value of zero and the same variance for all inputs of the neural network (column 1, lines 3539). Neuneier further states that when using permanently predetermined noise that has nothing to do with the system undesirable over-training of the neural network can arise (column 1, lines 51-56). The object of Neuneier's invention is to artificially form new training vectors for a neural network while avoiding over-training (column 1, lines 62-65). The artificially generated training vectors are dependent on the backward error that still exists after the training of the neural network and, thus, are dependent on the performance of the neural network. This is in direct contrast to the amended independent claims of applicants' application, wherein the artificially generated training data are dependent on the accuracy of the measurement values that is "wherein the training data are obtained by perturbing the data within an error range of the measurement accuracy". This limitation is not disclosed or suggested by Neuneier. Therefore, the amended independent claims are novel and not anticipated by Neuneier.

One other prior art considered as pertinent by the Examiner is Bigus (US 5,745,652), which deals with a computer operating system where the allocation of computing resources is done using a neural network. Performance data is collected by the system and used to train the system model neural network (cf. the abstract). The difference between the actual system performance Y and the predicted performance Y^* is used to train the system model neural network (column 5, lines 12-15). Computer system performance data are not measurement values in the physical sense of the present application. They do not display an inaccuracy. Bigus does not discuss the introduction of noise into neural network training data in any way. Therefore, the amended claims are novel over Bigus.

The prior art considered by the Examiner in the form of Bigus (US 5,704,012) deals with a computer operating system where the allocation of computing resources is done using a neural network. Performance data is collected by the system and used to train the system model neural network (cf. the abstract). The difference between the actual system performance Y and the predicted performance Y^* is used to train the system model neural network (column 5, lines 12-20). Computer system performance data are not measurement values in the physical sense of the present application. They do not display an inaccuracy. Bigus does not discuss the introduction of noise into neural network training data in any way. Therefore, the amended claims are novel over Bigus.

The prior art considered by the Examiner is Skeirik (US 5,626,249). Skeirik discloses a process control system using the predictive power of neural networks. An on-line training neural network for process control system and method trains by retrieving training sets from the stream of process data. The neural network detects the availability of new training data and constructs a training set by retrieving the corresponding input data. The neural network is trained using the training set (cf. the abstract). Error data is also used for automatically retraining the neural network (column 13, lines 48-56). Skeirik does not disclose the introduction of noise into neural network training data in any way. Therefore, the amended claims are novel over Skeirik.

In view of the Amendments and discussion above, Applicants respectfully submits that the application should be allowable.


CONDITIONAL PETITION FOR EXTENSION OF TIME

If entry and consideration of the amendments above requires an extension of time, Applicants respectfully request that this be considered a petition therefore. The Assistant Commissioner is authorized to charge any fee(s) due in this connection to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to Deposit Account No. 14-1263.

Respectfully submitted,
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